PATENT COOPERATION TREATY

PCT

09/155,605

From the INTERNATIONAL BUREAU

To:

United States Patent and Trademark Office
(Box PCT)
Crystal Plaza 2
Washington, DC 20231
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

NOTIFICATION CONCERNING DOCUMENT TRANSMITTED

Date of mailing (day/month/year) 16 November 1998 (16.11.98)	
International application No. PCT/EP97/02589	**International filing date** (day/month/year) 21 May 1997 (21.05.97)
Applicant UNIVERSAL MASCHINENFABRIK DR. RUDOLF SCHIEBER GMBH & CO. KG et al	

The International Bureau transmits herewith the following documents and number thereof:

_____ copy of the English translation of the international preliminary examination report (Article 36(3)(a))

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

C. Carrié

Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

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Crystal Plaza 2
Washington, DC 20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 15 December 1997 (15.12.97)	
International application No. PCT/EP97/02598	**Applicant's or agent's file reference** PCT-2649
International filing date (day/month/year) 12 May 1997 (12.05.97)	**Priority date** (day/month/year) 10 May 1996 (10.05.96)
Applicant MOLLEE, Hinderikus, Marius et al	

1. The designated Office is hereby notified of its election made:

[X] in the demand filed with the International Preliminary Examining Authority on:

27 November 1997 (27.11.97)

[ ] in a notice effecting later election filed with the International Bureau on:

2. The election [X] was

[ ] was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

S. Cruz

Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	FOR FURTHER ACTION	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
PCT-2649		
International application No.	International filing date (day/month/year)	(Earliest) Priority Date (day/month/year)
PCT/EP 97/02598	12/05/1997	10/05/1996
Applicant		
YAMANOUCHI EUROPE B.V. et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. [ ] **Certain claims were found unsearchable** (see Box I).

2. [ ] **Unity of invention is lacking** (see Box II).

3. [ ] The international application contains disclosure of a **nucleotide and/or amino acid sequence listing** and the international search was carried out on the basis of the sequence listing
   - [ ] filed with the international application.
   - [ ] furnished by the applicant separately from the international application,
     - [ ] but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.
   - [ ] Transcribed by this Authority

4. With regard to the **title,**
   - [X] the text is approved as submitted by the applicant.
   - [ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**
   - [X] the text is approved as submitted by the applicant.
   - [ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this International Search Report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is:
   Figure No. _____
   - [ ] as suggested by the applicant.
   - [ ] because the applicant failed to suggest a figure.
   - [ ] because this figure better characterizes the invention.
   - [ ] None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 97/02598

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A61K9/127

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 95 20945 A (KARLSHAMNS LIPIDTEK ABNIK) 10 August 1995 cited in the application see page 17; example 5 ---	1,2, 8-11,16, 17
Y	EP 0 521 562 A (BROCADES PHARMA B.V.) 7 January 1993 see the whole document & WO 93 00069 A cited in the application ---	1-16
Y	EP 0 678 295 A (CITERNESI) 25 October 1995 see column 5, line 5 - line 19 see column 7, line 11 - line 19 ---	1-17
A	WO 95 13795 A (CORTECS LIMITED) 26 May 1995 see page 26 - page 27; examples 10,11 --- -/--	1-17

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
28 August 1997	09.09.97

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+ 31-70) 340-3016	Benz, K

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 97/02598

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 40 21 083 A (LAUTENSCHLÄGER) 23 January 1992 see page 6, line 45 - line 48 see page 7, line 58 - page 8, line 2	1-17

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/EP 97/02598

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9520945 A	10-08-95	AU 1723395 A	21-08-95
		AU 1723495 A	21-08-95
		AU 1723595 A	21-08-95
		CA 2182575 A	10-08-95
		CA 2182576 A	10-08-95
		CA 2182577 A	10-08-95
		CN 1140405 A	15-01-97
		CN 1140406 A	15-01-97
		CN 1144478 A	05-03-97
		CZ 9602215 A	13-11-96
		EP 0744939 A	04-12-96
		EP 0743851 A	27-11-96
		FI 963064 A	30-09-96
		FI 963065 A	30-09-96
		FI 963066 A	30-09-96
		HU 75464 A	28-05-97
		HU 75470 A	28-05-97
		HU 75459 A	28-05-97
		NO 963240 A	02-08-96
		NO 963241 A	02-08-96
		NO 963242 A	02-08-96
		PL 315778 A	09-12-96
		PL 315779 A	09-12-96
		PL 315780 A	09-12-96
		WO 9520943 A	10-08-95
		WO 9520944 A	10-08-95
		ZA 9500939 A	09-10-95
		ZA 9500940 A	09-10-95
		ZA 9500941 A	09-10-95
		SE 9402456 A	13-01-96
EP 521562 A	07-01-93	CA 2089494 A	27-12-92
		JP 6500735 T	27-01-94
		WO 9300069 A	07-01-93
EP 678295 A	25-10-95	NONE	
WO 9513795 A	26-05-95	AU 8149694 A	06-06-95
		CA 2176577 A	26-05-95
		CN 1137751 A	11-12-96

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/EP 97/02598

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9513795 A		EP 0729350 A	04-09-96
		ZA 9409109 A	16-05-96
DE 4021083 A	23-01-92	NONE	

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

YAMANOUCHI EUROPE B.V.
Elisabethhof 19
P.O. Box 108
2350 AC Leiderdorp
PAYS-BAS

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing *(day/month/year)*	03. 98
Applicant's or agent's file reference PCT-2649	**IMPORTANT NOTIFICATION**

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/EP97/02598	12/05/1997	10/05/1996

Applicant
YAMANOUCHI EUROPE B.V. et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.

2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.

3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/	Authorized officer
European Patent Office D-80298 Munich Tel. (+49-89) 2399-0, Tx: 523656 epmu d Fax: (+49-89) 2399-4465	Tantum, P Tel. (+49-89) 2399-8143

Form PCT/IPEA/416 (July 1992)

Translation

4

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference UN-PCT-1801	**FOR FURTHER ACTION**	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/EP97/02589	International filing date (*day/month/year*) 21 May 1997 (21.05.1997)	Priority date (*day/month/year*) 26 June 1996 (26.06.1996)
International Patent Classification (IPC) or national classification and IPC D04B 15/78		
Applicant UNIVERSAL MASCHINENFABRIK DR. RUDOLF SCHIEBER GMBH		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
17 November 1997 (17.11.1997)	04 June 1998 (04.06.1998)
Name and mailing address of the IPEA/EP European Patent Office D-80298 Munich, Germany Facsimile No. 49-89-2399-4465	Authorized officer Telephone No. 49-89-2399-0

International application No.
PCT/EP97/02589

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

I. Basis of the report

1. This report has been drawn on the basis of (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

☐ the international application as originally filed.

☒ the description, pages 1 - 12, as originally filed,
pages _____, filed with the demand,
pages _____, filed with the letter of _____,
pages _____, filed with the letter of _____.

☒ the claims, Nos. 1 - 15, as originally filed,
Nos. _____, as amended under Article 19,
Nos. _____, filed with the demand,
Nos. _____, filed with the letter of _____,
Nos. _____, filed with the letter of _____.

☒ the drawings, sheets/fig 1/1, as originally filed,
sheets/fig _____, filed with the demand,
sheets/fig _____, filed with the letter of _____,
sheets/fig _____, filed with the letter of _____.

2. The amendments have resulted in the cancellation of:

☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/fig _____

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

4. Additional observations, if necessary:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/EP 97/02589

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1 - 15	**YES**
	Claims		**NO**
Inventive step (IS)	Claims	1 - 15	**YES**
	Claims		**NO**
Industrial applicability (IA)	Claims	1 - 15	**YES**
	Claims		**NO**

2. Citations and explanations

1. The closest prior art is represented by the applicants' DE 42 25 655 A and is acknowledged accordingly in the introductory part of the application description. The subject matter of independent Claim 1 differs therefrom by the adjacent arrangement of two securing magnets with different polarity such that they secure operating elements in their initial positions.

Therefore the subject matter of Claim 1 appears to be novel and should satisfy the requirements of PCT Article 33(2).

2. None of the citations describes the rigid securing of two securing magnets of different polarity on the machine part that supports textile machine operating elements in order to secure the operating elements in their initial positions. The prior art cited in the search report concerns circular knitting machines in which, in contrast to flat bed knitting machines as per the preferred embodiment of the invention, securing magnets are not provided on the needle carrier but only in the immediate vicinity of the selector magnets. Since the searched prior art

does not suggest this, the combination of the above-mentioned features as concerns a textile machine according to DE 42 25 655 A does not appear to be obvious.

Therefore the subject matter of independent Claim 1 should likewise satisfy the requirements of PCT Article 33(3).

3. The embodiments of the invention as per dependent Claims 2 to 15 include all the features of the invention as per independent Claim 1. Consequently the subject matter of these claims should likewise satisfy the requirements of PCT Article 33(2) and (3).

4. The subject matter of Claims 1 to 15 appears to have industrial applicability and should therefore satisfy the requirements of PCT Article 33(4).

VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

1. Pages 8 and 11 of the description refer to a German patent application which is not designated in further detail. This indication is meaningless without a precise designation and does not satisfy the requirements of PCT Rule 9.1(iv).

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

1. The meaning of the final relative clause in Claims 1 and 2 is the same, the wording according to Claim 2 being the clearer.

   Owing to the redundancy of some of the claims, the clarity and conciseness requirement of PCT Article 6 is not satisfied.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (PCT/IPEA/416)
PCT-2649		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/EP97/02598	12/05/1997	10/05/1996
International Patent Classification (IPC) or national classification and IPC		
A61K9/127		
Applicant		
YAMANOUCHI EUROPE B.V. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☒ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
27/11/1997	12.03.98
Name and mailing address of the IPEA/	Authorized officer
European Patent Office D-80298 Munich Tel. (+49-89) 2399-0, Tx: 523656 epmu d Fax: (+49-89) 2399-4465	Hedegaard, A Telephone No. (+49-89) 2399-8644

Form PCT/IPEA/409 (Cover sheet) (January 1994)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP97/02598

I. Basis of th r port

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1-11 as originally filed

Claims, No.:

1-17 as originally filed

2. The amendments have resulted in the cancellation of:

☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims 1-17
	No:	Claims
Inventive step (IS)	Yes:	Claims 1-17
	No:	Claims
Industrial applicability (IA)	Yes:	Claims 1-17
	No:	Claims

2. Citations and explanations

see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Item V (reasoned statement):

1. The subject-matter of claims 1-8 (powder), 9-15 (process), 16 (composition) and 17 (process) is novel (Art. 33(2) PCT) since a powder of reversed vesicles, which comprises one or more non-ionic surfactants has not been disclosed in the available prior art documents.

   Claim 16 refers to a composition prepared with said powder (product by process). Such a composition is considered different from those of the prior art (in particular WO-A-9 520945 and EP-A-0 521 562) in view of the comparative examples on pages 7-8 (tables 1 and 3) of the description where it can be seen that dispersions of powders according to the present invention are distinct from dispersions of reversed vesicles directly prepared in the apolar oil (prior art).

   WO-A-9 520 945 and EP-A-0 521 562 (closest prior art) disclose dispersions of reversed vesicles, which comprise non-ionic surfactants. However, these documents are silent about powders of said vesicles.

   EP-A-0 678 295 discloses powders obtained from multilamellar phospholipid/active principle structures. This document is silent about reversed vesicles comprising non-ionic surfactants.

2. It could not be foreseen from any of the above-mentioned documents (either alone or in combination) that when a powder of reversed vesicles comprising non-ionic surfactant(s) is dispersed in an apolar vehicle the amount of reversed vesicles is very high as compared with the yield of reversed vesicles when these would have been prepared directly in the apolar oil. Therefore, the subject-matter of claims 1-17 is considered to involve an inventive step (Art. 33(3) PCT).

Item VIII (certain observations):

1. The statement in the description on page 4 (l. 26-30) implies that the extent of protection may be expanded in some vague and not precisely defined way; thereby resulting in lack of clarity (Article 6 PCT).

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	**ES**	Spain	**LS**	Lesotho	**SI**	Slovenia
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DK	Denmark	**LK**	Sri Lanka	**SE**	Sweden		
EE	Estonia	**LR**	Liberia	**SG**	Singapore		

SURFACTANT SYSTEMS

Their chemistry, pharmacy and biology

D. Attwood
Department of Pharmacy
University of Manchester

A. T. Florence
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University of Strathclyde

NEW YORK
CHAPMAN AND HALL

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Attwood, D.
Surfactant systems.
1. Surface active agents
I. Title II. Florence, A. T.
668'.1 TP994

ISBN 0-412-14840-4

Contents

with long-chain alcohols can give rise to vesicle-like formations under the microscope. Hargreaves and Deamer [309] refer to the formation of uni-, oligo- and multilamellar vesicles in the size range 1 to 100 μm in such systems. Apart from the fatty acid vesicles, which they prepared by titrating alkaline solutions with acid or by mixing equimolar quantities of fatty alcohols, sodium dodecyl sulphate–dodecanol mixtures also formed the basis of the vesicles. Addition of fatty alcohols or indeed hydrophobic derivatives of non-ionic surfactants to micellar systems of more hydrophilic homologues can lead to the formation of very asymmetric micelles which at some point must begin to assume the properties of stable bilayers [311]. This is clearly an area for intensive study.

An attempt has been made to distinguish the boundaries between micelles, microemulsion particles and vesicles in Table 4.27 from Fendler [312]. The main distinguishing feature of vesicular structures is their permanence on a micellar timescale as established by studies of monomer kinetics and the kinetics of solubilizate exchange with the environment as well as of their stability to dilution by water.

Table 4.27 Comparison of micelles, microemulsions and vesicles

	Micelles	Microemulsions	Vesicles
Weight averaged molecular weight	2000–6000	10^5–10^6	$> 10^7$
Diameter (nm)	3–6	5–100	30–500
No. of solubilizate molecules per aggregate	Few	Large	Large
Kinetic stability (leaving rate of monomers), s	$\sim 10^{-5}$	$\sim 10^{-5}$	> sec
Solubilizate residence time, s	10^3–10^5	10^3–10^5	> sec
Dilution by water	Destroyed	Altered	Remain stable

From Fendler [312]

4.4.6 Lipoprotein aggregates

None of the plasma lipids are sufficiently polar to circulate as separate entities in solution; rather they depend on interactions with protein and are consequently referred to by the generic name 'lipoprotein'. The soluble lipoprotein aggregates bear some resemblance to micellar aggregates and vesicles although there is still much uncertainty about their structure. The most important groups of lipoprotein are the high-density or α-lipoproteins (HDL), the low-density or β-lipoproteins (LDL), the very low-density (VLDL) and chylomicra. VLDL and chylomicra appear to be spherical; a lipid bilayer structure proposed for the LDL aggregate is shown in Fig. 4.46. The components include proteins and phospholipids, the apolar cholesteryl esters and triglycerides and free cholesterol. All lipoprotein models have some common features and are all based on the